

Overview on Corporate Social Responsibility of Farm Chemical Companies, Paddy Farmers and Chronic Kidney Disease in Polpithigama, Sri Lanka

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Abstract:

Introduction: Sri Lankan society as well as in the world that farm chemicals causes a deadly disease called chronic kidney disease of unknown etiology, due to the Rice Farming production is increasing using them. The present societal marketing strategies of farm chemical companies are gradually encroaching the rice farmers and eventually given rise to a concept called corporate social responsibility.

Objective: Overview on corporate social responsibility of farm chemical companies, paddy farmers and chronic kidney disease.

Methodology: The study Sample was represented by 30 chronic kidney disease of unknown etiology patients of kidney unit of Divisional Hospital, Polpithigama, 5 Rice Farmers, 3 Farm chemical suppliers and 5 Doctors who has selected by random sampling method. Data were collected by using interviewer administered questionnaire and in-depth interview following informed written consent. The study was approved by ethical review committee of north western provincial health department. Statistical analysis was done using Excel worksheets.

Results: Male to female ratio was 2:1. Half of the study sample belongs to 45-70 age group. All are using farm chemicals at field. 80% are using drinking water from wells. 60% are not using mouth covers and 90% was not covering full body when chemical spraying. 90% of the study sample washed chemical spraying equipment from common water sources. 60% of them used farm chemicals and selected specific brand after introduced by farm chemical companies. Whole study sample was aware of farm chemicals causing chronic kidney disease. Also 90% of them expected to use them in next term.

Conclusion: According to results farm chemical companies follow an unethical way of doing business and also they break their corporate social responsibility towards the society as a whole. But in order to protect the Sri Lankan farmer and the society from such unethical farm chemical companies should promote traditional alternative methods for farm chemicals and implementing a water supply system to those areas and motivating people to consume water taken from those supplies. Should conduct more awareness and sensitization programs for farmers and should implement a participatory national decision making system for agricultural related things where farmers, farm chemical sellers, general public, government agents and farm chemical companies were participated.

Keywords —Chronic kidney disease of unknown etiology, Rice, Farmers, Chemical, Companies, Social responsibility.

I. INTRODUCTION

Sri Lanka is a South Asian Country which is situated near the equator. Agriculture is the main income generating method and most important sector of the Sri Lankan economy. Asian farmers still account for 92% of the world's total rice production (Maiti, Satya, Rajkumar, & Ramaswamy, 2012, p. 45). Being an Asian country, in Sri Lankan subsistence sector, rice is the main crop and farming rice is the most important economic activity for the majority of the people living in rural areas (Advameg, 2017).

During 1963-64 period the rice yields in Sri Lanka was very low. The average yield stood at around 1.8 kg per hectare (Senerath, 2013).

When it comes to late 1960's Sri Lanka began to change its agricultural strategy based on Green Revolution (Lobb, 2016). Simultaneously the seed division of the agriculture department took over the task of producing new varieties of seed paddy for distribution to farmers phasing out the production of old improved varieties. Hence the growing of New Improved Varieties caught up with farmers rapidly. As a result the average yields in Sri Lanka rose to 2.4 tons per hectare by 1968 (Senerath, 2013).

With these hybrid seeds weeds began to spread in large scales by about 1980 (Campbell & Snow, 2007). As a solution, department of Agriculture of Sri Lanka promoted Farm Chemicals among Rice Farmers through Agricultural Instructors. One example for this was that the amount of sale of seed, planting materials and pesticides was one of the criteria in recommending annual salary increment of the agricultural instructor (Senerath, 2013).

Adding to this, by about 1990 onwards the cost of labour increased. Since farmers could not afford transplanting costs, more and more farmers used to control weeds by using herbicides. Therefore herbicides became a part and parcel in rice cultivation. It was a boon to pesticide companies and more and more companies and people took to this business. Thereby it gave rise to competition

between them and embarking on large scale campaigns.

Strong and forceful campaigns by pesticide companies competing with each other made a huge impact on farmers and changing their attitudes and practices so much so that pesticides came to be known as 'Beheth,' medicines for pest issues.

Gradually with time, pesticide handling and use was getting out of control. As such the government started awareness programs on the hazards of pesticides and conducted training for farmers on safe use of these products. But the impact was slow.

The present societal marketing strategies of farm chemical companies are constantly evolving and have given rise to a concept called Corporate Social Responsibility (CSR). Most of the leading companies had realized the importance of being associated with socially relevant means of promoting their products. CSR refers to the organization's obligation to all their stakeholders. "It stems from the desire to do well and get self-satisfaction in return as well as societal obligation of business". Currently, CSR has gone beyond the charity works and donations, and is associated with more organized manner. It has become an essential part of the corporate strategy. Organizations have CSR managers that set for specific policies, strategies and goals for their Corporate Social Responsibility programs and allocate budgets to support them.

However, now the matter is that there is a debate in the Sri Lankan society as well as in the world that these Farm Chemicals causes a deadly disease called Chronic Kidney Disease, due to the Rice Farming production is increasing using them. This chronic kidney disease of unknown origin (CKDU) was firstly recognized from Padaviya farm colony in 1994 (Senevirathne, 2016, p. 4).

Chronic kidney disease (CKD) is characterized by progressive destruction of renal mass with irreversible sclerosis and loss of nephrons over a period of months to years, depending on the any of the etiologies like Diabetic Nephropathy, Hypertension, Interstitial Disease,

Glomerulonephritis, Obstructive Uropathy, Adult Polycystic Kidney Disease and Unknown causes. It has been estimated that if the underline causes unchanged, it will affect 10 to 15% of the adult population in the country within next 10 years. (Aloysius, 2015, p. 8). It is really a need to find out reason behind the CKDU which is a special type of CKD prevailing in tropical agricultural areas of Sri Lanka. (Gooneratne, Ranaweera, Liyanarachchi, Gunawardane, & Lanerolle, 2008).

2. Objectives

1. To identify whether there is a possibility for farmers to end up with CKDU through farm chemicals.
2. To identify the exposure method of farm chemicals causing CKDU
3. To identify whether it is a must to use farm chemicals to improve production of paddy or are there any other solution/s available.
4. To identify the role played by farm chemical companies to make the rice farmers use their products.
5. To identify ways to reduce the number of farmers ends up with CKDU through farm chemicals.

3. Background of the Study

When it comes to Sri Lankan farmers, it is questionable them to following scientific farming. Tend to follow irrational agricultural practices and follow the marketing trend easily. Due to these reasons Sri Lankan farmers have to face large number of occupational diseases when compared to the farmers of countries where the farmer is a "Trained Professional" and so he knows and wants to find health security methods while carrying out their agricultural activities. Such common diseases are body aches and pains, exposure to hazardous chemicals and chemical poisoning, kidney disease, leptospirosis (commonly known as rat fever), accidents encountered when using machines,

elephant attacks, snakebites, exposure to high temperature and mental stress.

Today in this agricultural island Sri Lanka, Non-Communicable Diseases (NCDs) cause more than 75% of deaths and nearly 1 in 5 people die prematurely from NCDs. And most of the deaths out of this 75% are due to a deadly disease called "Chronic Kidney Disease (CKD)" which has aroused in Sri Lanka. When we consider the world rankings of countries according to the death rate from the Kidney Disease Sri Lanka has got the 66th place and has been recorded as a 2nd highest Kidney Disease death Rate recording countries' category (World Health Organization, 2014).

A special type of CKD called as "Chronic Kidney Disease of Unknown Etiology (CKDU)" was firstly detected in the early 1990s in the Northern District and now it is spreading in dry zone of Sri Lanka which consists of Uva, North Central (NCP) and North Western Provinces where the etiology is different from common causes like diabetes and high blood pressure and seemed to be unknown (ICEI, 2016).

This new form of Chronic Kidney Disease (CKD) is pervading the dry zone of Sri Lanka and it is setting up a humanitarian tragedy with huge implications for society, economy, and environment. CKD is mainly common among male farmers between the ages of 40 to 60, engaged in rice cultivation, although lately, it has also been identified among women, children, and even cattle (ICEI, 2016).

Pesticides and Fertilizers used in paddy production is blamed here a lot making it a break of corporate social responsibility and ethics by the Farm Chemical Companies and the Rice Farmers.

However due to this disease, farmers who are the country's most productive crowd are being lose. For instance, we have lost 15% of farmers in North central province of country due to this reason. And also finally it affects the gross domestic product of the country and the general public who consume the products where the chemicals are used to produce them.

The Chronic Kidney Disease (CKDu) has currently become a national humanitarian emergency in Sri Lanka. Providing medication and dialysis for those living with CKD already costs more than 5% of the country's annual health budget (ICEI, 2016). When a breadwinner develops kidney disease, he can no longer work and the entire family goes into financial ruin and debts. In some cases, children have had to forego schooling to find employment and women have had to engage in prostitution for economic survival (ICEI, 2016).

Sri Lankan Government and World Health Organization (WHO) did a joint investigation on this regard to find out the actual causes behind this CKDU. According to their findings culprits were two toxic metals called "Arsenic" and "Cadmium" which contain in both food and air.

According to Sri Lankan Ministry of Health though relatively high level of metals is found in blood and urine of people in NCP, those levels were generally within the safe range. So, now they argue that it may be due to continuous exposure to those levels.

Now the actual matter which affects our study comes into arena with the question where do these metals come from? The most of the fingers are pointed out towards the farm chemicals which are cheap in Sri Lanka as a result of government subsidies and overuse.

Cadmium can be found in some fertilizers while Arsenic is contained in most of the pesticides. Meanwhile Sri Lankan government has banned farm chemicals which contain Arsenic.

But while things are going on like this from Sri Lankan government side Farm Chemical Companies argue that the evidences are not scientific enough to prove that Farm Chemicals cause CKDU. The matter has expanded to the industry trade associations as well. CIC, Lankem, Harcros, Helis, Opex-Agro, Polikemex, Sun Agro, MacWoods and Hextar are some Farm Chemical Companies operating in Sri Lankan market currently.

But still majority of the parties who are involved in the matter believes that even partly the Farm

Chemical Companies should be liable here. Some doctors and scientists ask for further study.

The parties who believe that the Farm Chemicals are really guilty here come up with different solutions. Government suggests preventing indiscriminate Fertilizer and Pesticide use. But it is a dilemma whether still the people who should hear this has heard it as still some farmers who are suffering from CKDU in NCP have Fertilizer and Pesticide stocks to be used in their next turn even without knowing those are considered as a cause for their suffering. Doctors of NCP want government to improve tests on Farm Chemical imports. As they argue still we do not know the ingredients of Fertilizers import from countries like China and according to them Sri Lankan Custom Officers are also silent in front of the matter.

The Rice Farmers of Sri Lanka who are very afraid of losing their harvest and solely depend on the income generated through that harvest have used to buy whatever the chemical products are promoting by the farm chemical suppliers. The "traditional Agro farmer" of Sri Lanka is gradually turning into an "irrational, depended farmer".

And also a group of Sri Lankans who sell the unique, traditional culture of Sri Lanka for the portion received from these so called Farm Chemical Companies has emerged in Sri Lankan society. In an era where the name of the Farm Chemical itself attracts the Farmer's mind (Ex: HarcrosPatas) this group of people representing themselves as a valuable proof for the innocent Rice Farmer to use such products without further inquiry.

We have happened to do the study in a background where there are lots of unanswered questions regarding the matters such as Will the levels of metals found in patients is high enough to cause them harm?, If metals are really a cause is it Arsenic or Cadmium or combination of metals cause the harm? Fertilizer or Pesticides is the highest attacker? If farm chemicals is the cause why farmers from other areas is not affected?

So, our study here will be in a background where even the causes of the matter is not clear enough

and if Farm Chemicals are really to be blamed above mentioned web of parties are to be blamed without giving excuse to any.

1. Methodology (Data Sources, Population and Sample Data Generation and Analysis)

1.1. Data Sources and Sample Data Generation

Farmer Patients - Semi Structured Interviews, Diagnosis Cards and Case Records and questionnaire.

Rice Farmers - Unstructured Interviews

Doctors - Unstructured Interviews

Chemical Suppliers - Unstructured Interviews

Related Offices and Institutes (Ex:- Department of Agriculture and GovijanaSewa Institute) - Online Research Articles and Websites.

4.2. Study Population, Sample and data collection

As the CKDU is the type of CKD which do not have a certain etiology it is our main concern here. So, our research area could be reduced to North Central Province (NCP), Uva Province (UP), and a few areas of the North Western Province (NWP) where the CKDU has become a threat. But due to the time limitation in dealing with the academic process our research was based on North Western Province only. And our main data source as an institution was the Kidney Unit of Divisional Hospital, Polpithigama in North Western Province. The Sample was represented by 30 patients, 5 Rice Farmers, 3 Farm chemical suppliers and 5 Doctors who has selected by random sampling method. Data were collected by using interviewer administered questionnaire and in-depth interview following informed written consent. The study was approved by ethical review committee of north western provincial health department.

4.3. Analysis

Statistical analysis was done using Excel worksheets.

5. Literature Review

GDP from Agriculture in Sri Lanka averaged 152739.74 LKR Million from 2010 until 2016, reaching an all-time high of 178979 LKR Million in the fourth quarter of 2014 (Sri Lanka GDP from Agriculture, 2017). It is the second most important source of employment for the majority of the Sri Lankan workforce which is 28.5% from the total employment of Sri Lanka (Sri Lanka Labour Force Survey-Annual Report, 2014, p. 16).

From 2013/2014 to 2014/2015 Sown Extent and Production Area of Maha Season has been increased by 18.63% (Paddy Statistics-2014/2015 Maha Season, 2015, p. 12). The highest production of 16,962,000 bushels (353,924 MT) of paddy in 2014/2015 was reported from Anuradapura District. Paddy production in Anuradapura District was accounted for about 12% of paddy production of the country (Paddy Statistics-2014/2015 Maha Season, 2015, p. 2). The contribution to the national paddy production from Polonnaruwa, Ampara and Kurunegala Districts were recorded as 12%, 11% and 10% respectively (Paddy Statistics-2014/2015 Maha Season, 2015, p. 2).

According to the World Health Organization's Global Burden of Disease (GBD) project, kidney and urinary tract disease is the 12th most common cause of death and the 17th most common cause of disability.

Researchers have suggested different etiologies for CKDU in Sri Lanka like high concentration of fluoride in water and use of aluminum utensils for cooking, using reservoir based cascade irrigation systems in agricultural regions, chronic dietary intake of cadmium and high natural levels of fluoride in drinking water and unrecognized environmental toxins or occupational exposures (Gooneratne, Ranaweera, Liyanarachchi, Gunawardane, & Lanerolle, 2008).

An argument within Sri Lanka is that this Arsenic and Cadmium which considered as a main cause to this CKDU in agricultural regions is mainly through Farm Chemicals which come to the country through farm Chemical Companies and misuse of them by Rice Farmers.

However, contradictory findings identified indicated that the moderate to high levels of fluoride and cadmium in drinking water in the affected regions did not contribute to CKDU (Gooneratne, Ranaweera, Liyanarachchi, Gunawardane, & Lanerolle, 2008).

A study reconfirms previous findings of drinking water from wells situated in the field being a significant predictor of early CKDU and suggest that the wells situated in the fields could have high concentrations of Cadmium (Cd) and other toxic compounds than wells situated in home gardens, due to the extensive use of pesticides and fertilizers in paddy cultivation in the study area, a possible source of Cd (Wanigasuriya, Peris, & Wickremasinghe, 2011). A study on the potential impact of heavy metals on groundwater as a result of fertilizer use suggests significant potential groundwater pollution from Cd, caused as a result of long-term use of phosphate fertilizers (Wanigasuriya, Peris, & Wickremasinghe, 2011).

And one of the statements of Prof. R.M.G. Rajapakse published in The Sri Lankan Scientist Magazine brings another argument as follows. "It is quite easy to blame on agro-chemicals for any epidemic though it is extremely hard to correlate agro chemically-derived species, except phosphate which may also come from natural processes, to the reabsorption mechanism of tabula. Accordingly, the drinking water of the NCP do not contain excessive amounts of Cadmium, Arsenic, lead ions and other conventionally toxic species" (Rajapakse, 2015, p. 15).

But at the same time we can see a controlling policy carried out by Sri Lankan government over these chemicals. According to the Website of Seed Certification and Plant Protection Centre, Gannoruwa from 1970 to 2015, 38 pesticides has been banned or severely restricted by Sri Lankan

government including Glyphosate, Propanil, Carbaryl, Chlorpyrifos, Carbofuran, Arsenic, Aldrin, DDT and Methyl.

But Glyphosate; a deadly poisoned farm chemical which was banned in Sri Lanka for the first time on 08th April 2013 and for the second time on 23rd of December 2014 has been imported to Sri Lanka in 20 containers by Café Mass company in Indonesia on 09th May 2015 (Saram, 2015, p. 17). Further, Saram argues that one of the politicians of NCP is standing with these farm chemical companies and he says Agricultural Minister, Professors, and Agriculture Registrars are also supporting them.

If Farm Chemicals has to pay compensation for all the farmers affected by farm chemicals it would cost them around 100-150 million rupees. So, they are trying to hide this tragedy by expending only 20-30 million rupees (Senevirathne, 2016).

Today, "Nourishing the Planet" which is a project assesses the state of agricultural innovations—from cropping methods to irrigation technology to agricultural policy—with an emphasis on sustainability, diversity, and ecosystem health, as well as productivity introduces five crop management methods that control pests without using chemical pesticides such as crop rotation, intercropping, crop diversity, using pests to fight pests and organic pesticides (Salinger, 2012).

So, under an era with contradictory opinions on the matter here throughout this article will bring the reality behind above mentioned ethical and social issue in Sri Lanka and alternative solutions to solve the issue.

6. Data Analysis and Discussion

As the main method of achieving primary data for current study, I used an interview with 30 patients whose occupation is Farming and suffering from CKDU. The questionnaire was made covering the first four objectives of the study. The results of the interview are as follows. As we cannot use lab tests and medical procedures to prove some results we have checked whether there is a possibility for the opinion that Farm chemicals are a cause for

CKDU. But we suggest further study to check whether this possibility is a truth.

Number of Participants: 30

CKD Type: CKD of Unknown Etiology

6.1. Results directing to the first objective

Sex:

Male : 21(0.7)

Female: 9(0.3)

Age:

<45 : 1(0.033)

45-70 : 16(0.533)

>70 : 13(0.433)

Occupation:

Farming : 17(0.567)

Farming + Other : 13(0.433)

Chemical Usage in Fields:

Yes : 30 (1.0)

No : 0 (0.0)

Majority of the CKDU farmers were males. And most of these farmers are above the age of 45 and out of that majority falls into the age category of 45-70. Some of these farmers were engaged in other jobs as well while farming. The rest of the farmers' occupation was only farming. All the respondents were using farm chemicals in their fields.

6.2. Results directing to the second objective

Food Acquisition:

Through only farming: 0 (0.0)

Through only market: 0 (0.0)

Both : 30 (1.0)

Water Consumption:

Through wells : 24 (0.8)

Through Lakes: 4 (0.133)

Other : 2 (0.067)

Usage of Mouth Covers in chemical spraying:

Yes : 12 (0.4)

No : 18 (0.6)

Usage of Clothes in the field:

Fully Covered : 1 (0.033)

Not fully covered : 29 (0.967)

Wearing boots in the field:

Use : 2 (0.067)

Not use : 28 (0.933)

Time period of spraying chemicals per day:

<1 hour : 0 (0.0)

1 hour – 3 hours : 26 (0.867)

>3 hours : 4 (0.133)

Water consumption while spraying:

Water sources in the field: 3 (0.1)

Home brought water : 27 (0.9)

Ways of washing the chemical equipment:

Lake/ Stream : 28 (0.933)

Home Well : 2 (0.067)

Taking food on chemical spraying days:

After coming home : 30 (1.0)

Staying in field : 0 (0.0)

This objective is to identify the ways in which this Farm Chemicals are exposed to the farmers. For this reason we examined the ways of food acquisition, sources of water for day to day activities, habits in spraying farm chemicals and the time period of spraying.

When it comes to the ways of food acquisition by these farmers all of these farmers buy them through market as well as from their own harvest. Specialty was that any of them never had bought rice from market but consumed their own harvest. As all the farmers are using farm chemicals and all of them use their own rice harvest, it is possible that heavy metals are exposed to the farmers through these foods which are produced using farm chemicals.

Around 0.8 farmers were using water from their home wells, around 0.133 farmers were using water from the lakes in the area and only a very insignificant percentage of farmers (0.067) were using purified water which was delivered to their houses for money. So, it is possible that these metal contaminants adding into the ground water sources like home wells and lakes and go into the people bodies through the water consumption.

And also as we can see through the above percentages a very significant amount of farmers are not using mouth covers, fully covered clothes

and boots while spraying farm chemicals. So, through the air they may be directly exposed to these contaminants.

90% of the farmers were used to drink water brought from home while spraying chemicals. And they told that is for their safety. But again the point is 93% of them wash the chemical equipment from the lakes or streams of the area. So, it pollutes the water sources directly and ground water sources as well from where the home wells receive water.

So, as majority of these farmers are exposed to these most of the unsafe conditions we suggest that they may get CKDU due to the continuous exposure to such metals through all of the above ways.

6.3. Results directing to the third objective

Why use chemicals?

- Only as an easy method : 0 (0.0)
- Only to increase harvest : 0 (0.0)
- Both : 30 (1.0)
- Other : 0 (0.0)

Things motivated to use chemicals in fields:

- Usage by other farmers : 30 (1.0)
- Motivation by sellers : 15 (0.5)
- Motivation by chemical companies : 20 (0.667)
- Motivation by government agents: 5 (0.167)

Have used alternatives for farm chemicals in fields?

- Yes : 22 (0.733)
- No : 8 (0.267)

Could get expected results through them?

- Yes : 20 (0.909)
- No : 2 (0.090)

Here our intention is to identify whether it is a must to use farm chemicals within the fields and are there any other solutions available for that. Around 73% which is a very significant amount of farmers had used alternatives for farm chemicals within their fields and gradually has moved to the farm chemicals. According to a 90% of farmers who had used alternative methods they could get expected

results from using previous traditional methods. All of the farmers interviewed were addicted to farm chemicals as they were a very easy method and also it helped in increasing the rice production. And the farmers moving from traditional methods to farm chemicals is as a result of motivation through usage by other farmers (100%), Motivation by sellers (50%), Motivation by chemical companies (67%) and Motivation by government agents (16%).

So, what can be identified here is that there are alternative solutions for the farm chemicals and using farm chemicals is not a must.

6.4. Results directing to the fourth objective

Reasons behind selecting a special farm chemical brand

- Usage by other farmers : 30 (1.0)
- Motivation by sellers : 15 (0.5)
- Motivation by chemical companies : 20 (0.667)
- Motivation by government agents: 5 (0.167)

Do you ask from sellers which brand to be used?

- Yes : 28 (0.933)
- No : 2 (0.667)

Have you changed your choice due to the opinion of the sellers?

- Yes : 28 (0.933)
- No : 2 (0.667)

Have you seen farm chemical advertisements?

- Yes : 30 (1.0)
- No : 0 (0.0)

Do you trust those advertisements?

- Yes : 3 (0.1)
- No : 0 (0.0)

Partially: 27 (0.9)

Reasons to trust those advertisements:

- Use of popular characters only : 0 (0.0)
- Use of eye catching images of the harvest only : 0 (0.0)
- Price factor only : 0 (0.0)

Mix of above all
: 30 (1.0)

Here our main intention is to identify the role played by farm chemical companies to make the rice farmers use their products. As we could identify through the interviews selection of one of the brands among the all farm chemical brands was based on the usage by other farmers, motivation by sellers, motivation by chemical companies and motivation by government agents. 100% of the interviewed farmers had influenced by the usage by other farmers in selecting their farm chemical brand. 50% of them were motivated by sellers, 67% was by chemical companies and 17% was by government agents.

But the edges of all of these motivations are linked with the farm chemical companies. First, agents of farm chemical companies come to a farmer who owns a paddy field which is located near to the road and ask him/her to try on a particular chemical brand and says it gives a rapid harvest. Then they display an advertisement in that field. The other farmers who see this advertisement come and ask from that particular farmer whether the particular chemical works well. As it gives a rapid harvest the particular farmer introduce the chemical as a good one to the other farmers and the whole area begins to use it. And also the farm chemical sellers of the area are also linked to the farm chemical companies.

According to the doctors we interviewed the agents of the farm chemical companies come to the sellers of the area and introduce them with their new products and ask them to promote them for a commission. So, when the farmers come and ask for a good chemical to be used the sellers introduce those new products for the commission. And also the agents of the farm chemical companies itself come to the houses of the farmers and promote their products. And the government posts like agriculture instructors are also having links with these chemical companies. So, they also promote such products.

And the other tragedy is 93% of the farmers use to ask from the sellers about which farm chemical

to be used in their fields and that 93% have changed their farm chemical choice due to the opinion of the sellers. This denotes how the farm chemical companies get benefits through the trust of farmers on the sellers and the extent of it.

And 100% of those farmers had seen farm chemical advertisements by farm chemical companies and 90% of them total and 10% of them partially trusted them as it is. No one was there who did not trust before an inquiry. 100% of them told that they trust them due to all the reasons; Use of popular characters, Use of eye catching images of the harvest and Price strategies. According to them as an example for price strategies high prices and giving the Rs. 500 product for Rs. 499 can be mentioned here.

The greatest tragedy is that farmers were using chemicals which were banned by the government at the moment also. Phenthoate, Chlorpyrifos, Phosphamidon, Glyphosate and Carbofuran are such banned chemicals which we could identify as still there in the market.

This shows the unethical behavior of farm chemical companies towards their customers and as well as towards the whole society.

6.5. Results directing to the fifth objective

Awareness on the fact that farm chemicals may cause CKDU:

Yes : 30 (1.0)
No : 0 (0.0)

Expectation to use farm chemicals in next turn:

Expect to use : 27 (0.9)
Not expect to use : 3 (0.1)

Willingness to go for new alternatives for farm chemical usage even it is somewhat difficult to use than the use of farm chemicals

Willing : 30 (1.0)
Not Willing : 0 (0.0)

Selection between health and easy methods of farming:

Health : 30
Easy methods of farming : 0

Here, the main intention is to identify whether there is a favorable situation to introduce alternative

solutions to reduce the number of farmers ends up with CKDU through farm chemicals.

100% of farmers are aware about the societal opinion that farm chemicals can cause CKDU. But they know only the opinions in the society and the people who have come up with the idea that farm chemicals can cause CKDU through their researches and experiments have not yet informed the people officially about such a relationship.

Though they are aware about such a relationship through the societal opinions 90% of the farmers are going to use farm chemicals for their next turn as well.

But 100% of farmers were willing to go for new alternatives for farm chemicals even it is somewhat difficult to use than the farm chemicals.

100% of them told that they would give priority to their health if they have to make a selection between their health and the method of doing farming. But most of them told that if they have not sufficient ways to live they have to ignore the health and have to choose easy ways of farming for the sake of their families.

This shows the lack of an official confirmation or official introduction of alternative methods to these farmers. So, this shows the necessity to carry out a program to educate all of these farmers as still they can be brought to the correct path according to their above answers and significant percentages.

7. Recommendations and Conclusion

According to current study there is a possibility that farm chemicals cause CKDU through continuous exposure. Under that possibility from the business perspective the producers of such farm chemicals; if not the farm chemical companies are the most responsible party for such consequences.

According to the current debates on ethics, ethics is about meeting the wellbeing of others. These farm chemical companies are guilty because they have neglected the minority who are suffering from CKDU in different areas of world. It is not good to put the lives of the farmers in danger for the betterment of others.

And also according to the corporate social responsibility expected through modern businesses all of the businesses have a responsibility over their customers and the society. According to the modified version of the Classical Model of Corporate Social Responsibility before achieving profits organizations should achieve moral minimum which is explained through three imperatives; to cause no harm, to prevent harm and to do good. But farm chemicals violate the first imperative here by producing farm chemicals which cause CKDU.

So, we can conclude here that farm chemical companies are guilty ethically and they break corporate social responsibility as well.

But in order to protect the Sri Lankan farmer and the society from such unethical farm chemical companies following suggestions can be made.

- Promoting traditional alternative methods for farm chemicals such as;
 - # Spraying the juice of Kohomba seeds.
 - # Spraying cow-dung
 - # Laying the leaves like Giliseeria on the liyedi before starting the farming in the particular turn.
- Implementing a water supply system to those areas and motivating people to consume water taken from those supplies.
- Implementing a system to inform people on the banned chemicals and to consult people on the ways to select a suitable, less risky farm chemical when it is needed to use farm chemicals.
- Finding a mean to connect farmers and researchers who do researches on farming related things.
- Implementing a reviewing procedure to ensure the ethical behavior of Agricultural Inspectors and farm chemical sellers.
- Participatory Guarantee System should be implemented to monitor the behavior of farmers, farm chemical sellers and farm chemical companies.
- Implementing regulations in order to ensure the ethical behavior of farm chemical companies and make a minimum standard level for the farm

chemicals which introduced to the Sri Lankan market.

- Custom officers' service must be reviewed and should ensure that the farm chemical products without minimum standard do not enter into the Sri Lankan market.

- Organizing the farmers as a community to raise their voice collectively to reject the farm chemical companies within Sri Lanka and to promote socially responsible, environmental friendly substitutes for farm chemicals.

- Should conduct more awareness and sensitization programs for journalists.

- Should introduce seeds without diseases.

- When motivating farmers to the poison less farming it is normal the quantity of production going down and production cost increases. So, government should interfere here by paying a high price for such farmers.

- Should follow a fair method in appointing presidents for the agriculture related corporations and should ensure that they possess the needed knowledge about the field.

- Should implement a participative national decision making system for agricultural related things where farmers, farm chemical sellers, general public, government agents and farm chemical companies are participated.

So, finally we can conclude that farm chemical companies follow an unethical way of doing business and also they break their corporate social responsibility towards the society as a whole.

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